IMPROVED STRUCTURE OF SUPPORTIVE WALKER

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a supportive walker for disable or old persons, and more particularly, to an improved structure of supportive walker that can easily be switched between the extended position and the folded position and then positively locked in the desired position.

2. Description of Related Art

A conventional supportive walker **90** is illustrated in FIG. 1 and generally includes a front frame **91** and a rear frame **92** which is pivotally connected to the front frame **91** by two safety buckles **94**. Each of the front frame **91** and the rear frame **92** has a wheel **95** connected to a lower end thereof. A limitation plate **93**, such as a link **931** in this case, is connected between the front frame **91** and the rear frame **92** so that the rear frame **92** can be expanded away from the front frame **91** or can be folded close to the front frame **91**. In an expansion status of the supportive walker **90**, a safety buckle **94** is connected between the front frame **91** and the rear frame **92** so as to ensure the fixed position of the front frame **91** and the rear frame **92**. The safety buckle **94** includes a slot **941** defined in the rear frame **92** and a connection plate **942**. The connection plate **942** has one end thereof connected to the link **931** and the other end of the connection plate **942** is engaged with the slot **941** so as to prevent the rear frame **92** from collapsing. Nevertheless, when the supportive walker **90** is moved on a rugged road, the connection plate **942** tends to disengage from the slot **941** and this could

result in an accident. Furthermore, the location of the connection plate **942** is not convenient for the user to operate, especially for the users who are disable persons.

The present invention intends to provide a safety means of a supportive walker wherein the operation for the safety means is easy and convenient for the disable persons.

Therefore, it is desirable to provide an improved speech recognition method to mitigate and/or obviate the aforementioned problems.

SUMMARY OF THE INVENTION

It is the main object of the present invention to provide a supportive walker, which has a simple structure. It is another object of the present invention to provide a supportive walker, which is safe in use. It is still another object of the present invention to provide a supportive walker, which can conveniently be set between the extended position and the folded position.

To achieve these and other objects of the present invention, the supportive walker comprises a front frame, a rear frame, a pair of limitation plates, and at least one safety means. Each of the front frame and the rear frame has a wheel connected to a respective lower end thereof. The limitation plates are adapted to support relative movements of the front frame and the rear frame between an extended position and a folded position. And the safety means is adapted to selectively lock the front frame and the rear frame between the extended position and the folded position. The present invention is characterized that the limitation plates are

respectively connected to the front frame and each limitation plate having a passage defined therethrough. While each safety means comprises a mounting unit and a control unit. The mounting unit is fixedly mounted on the limitation plate, and has two outwardly extended side wings each including a sliding slot. Further, the mounting unit defines an opening in a middle part thereof. The control unit, which is set between the side wings of the mounting unit, comprises a set of sliding channels on a middle part thereof corresponding to the sliding slot at each side wing and an inner protruding block corresponding to the opening of the mounting unit. The control unit further includes an actuating device having a hole corresponding to the sliding slots of the side wings and the sliding channels of the control unit. Such that a pivot pin is adapted to pivotally connect the hole of the actuating device to the sliding slots of the side wings and the sliding channels of the control unit for enabling the actuating device to be operated to move the pivot pin along the sliding slots and the sliding channels and to further move the inner protruding block through the opening into the passage to lock the rear frame to the front frame between the extended position and the folded position, or to move the inner protruding block out of the passage to unlock the rear frame from the front frame for enabling the rear frame and the front frame to be moved relative each other between the extended position and the folded position.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a supportive walker according to the prior art;

FIG. 2 is a perspective view of the preferred embodiment of the present invention, showing the supportive walker locked in the extended position;

FIG. 3 is an exploded view of the safety lock for the supportive walker according to the present invention;

FIG. 4 is an assembly view of FIG. 3;

FIG. 5 is a schematic drawing showing the operation of the safety lock according to the present invention (I);

FIG. 6 is a schematic drawing showing the operation of the safety lock according to the present invention (II);

FIG. 7 is a schematic drawing showing the operation of the safety lock according to the present invention (III); and

FIG. 8 is another perspective view of the preferred embodiment of the present invention, showing the supportive walker locked in the folded position.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 2, the supportive walker **10** in accordance with the present invention is shown comprising a front frame **20**, a rear frame **30**, two limitation plates **40**, and a safety lock **S**. As illustrated in FIG. 2, the bottom side **23** of the front frame **20** and the bottom side **34** of the rear frame **30** are respectively equipped with at least one wheel **11**. According to this embodiment, the supportive walker **10** is equipped with four wheels **11**. Alternatively, the supportive walker can be made having only three wheels (one at the front frame and two at the rear frame). Left and right brake

devices **12** are respectively provided at first front vertical bar **21** and second front vertical bar **22** of the front frame **20** at the top. The rear frame **30** is comprised of a first rear vertical bar **31**, a second rear vertical bar **32**, and a connection bar **33**. The connection bar **33** is connected between the top end of the first rear vertical bar **31** and the top end of the second rear vertical bar **32**, enabling the first rear vertical bar **31** and the second rear vertical bar **32** to be moved synchronously.

Referring to FIG. 3 and FIG. 2 again, in order to let the user use, store, or carry the supportive walker **10** conveniently, the limitation plates **40** and the safety lock **S** are provided to control folding and extending operation between the front frame **20** and the rear frame **30**.

According to this embodiment, the limitation plates **40** are respectively disposed at the first front vertical bar **21** and second front vertical bar **22** of the front frame **20**, and respectively fixedly fastened to the front vertical bar **21** and the second front vertical bar **22** by fastening members **42**. Alternatively, the limitation plates **40** can be respectively formed integral with the front vertical bar **21** and the second front vertical bar **22**. Each limitation plate **40** has a passage **41** defined therethrough adapted to accommodate the connection bar **33**, enabling the connection bar **33** to be moved within the passage **41**.

The safety lock **S** is comprised of a mounting unit **SA** and a control unit **SB**. According to this embodiment, the mounting unit **SA** is fixedly mounted on the limitation plate **40** at the first front vertical bar **21** (alternatively, two safety locks may be used and respectively installed in the

limitation plates at the first and second front vertical bars of the front frame). The aforesaid fastening members **42** are respectively mounted in respective screw holes **A1** at the mounting unit **SA** to fixedly secure the mounting unit **SA** to the corresponding limitation plate **40**. The control unit **SB** is provided between two outwardly extended side wings **A2** of the mounting unit **SA**, and adapted to control folding and extending operations of the supportive walker **10** by means of the functioning of a spring force set formed of a compression member **B5**, a supporting member **B6**, and a spring member **B7**.

The detailed structure and operation method of the safety lock **S** are described hereinafter with reference to FIG. 4 and FIG. 3 again. The second pivot pin, referenced by **B2**, is mounted in axle holes **A3** and **B22** to pivotally connect the control unit **SB** to the mounting unit **SA**. C-shaped retainers **B21** are respectively clamped on two distal ends of the second pivot pin **B2** to secure the second pivot pin **B2** to the mounting unit **SA**, for enabling the control unit **SB** to be turned about the second pivot pin **B2** relative to the mounting unit **SA**. The two outwardly extended side wings **A2** of the mounting unit **SA** each have a L-shaped sliding slot **A21**. The control unit **SB** has a set of oblong sliding channels **B8** disposed on the middle corresponding to the L-shaped sliding slots **A21** at the outwardly extended side wings **A2** of the mounting unit **SA**. The aforesaid spring force set has a hole **B12** disposed at the bottom side corresponding to the L-shaped sliding slots **A21** at the outwardly extended side wings **A2** and the oblong sliding channels **B8** at the control unit **SB**. A first pivot pin **B1** is

mounted in the hole **B12**, the L-shaped sliding slots **A21**, and the oblong sliding channels **B8** and secured in place by C-shaped retainers **B11**. According to this embodiment, the L-shaped sliding slots **A21** each have a part (hereinafter called the locating slot section) disposed in parallel to the passage **41** of the corresponding limitation plate **40** for positioning. The other part (hereinafter called the sliding slot section) of each L-shaped sliding slot **A21** is smoothly curved for sliding. When set the first pivot pin **B1** in the locating slot section of each L-shaped sliding slot **A21**, as shown in FIG. 4, the control unit **SB** is locked to the mounting unit **SA**. At this time, the inner protruding block **B4** of the control unit **SB** is inserted through an opening **A4** in a middle part of the mounting unit **SB** and into the passage **41** of the corresponding limitation plate **40** to hold down the connection bar **33**, and therefore the supportive walker **10** is locked in the extended (or folded) position. On the contrary, when set the first pivot pin **B1** in the sliding slot section of each L-shaped sliding slot **A21**, as shown in FIG. 5, the spring force set is turned about the second pivot pin **B2** to move the first pivot pin **B1** outwards along the sliding slot section of each L-shaped sliding slot **A21**, thereby causing the inner protruding block **B4** of the control unit **SB** to be disengaged from the passage **41** of the corresponding limitation plate **40** to release the connection bar **33**, for enabling the front frame **20** and the rear frame **30** to be moved relative to each other between the extended position and the folded position.

FIGS. 5~7 are schematic drawings showing continuous actions to set the supportive walker **10** from the extended position shown in FIG. 2,

where the connection bar **33** is received in between the inner protruding block **B4** and bottom projections **B3** of the control unit **SB** at the bottom side inside the passage **41**, to the folded position shown in FIG. 8, where the connection bar **33** is received in the passage **41** above the inner protruding block **B4**. The user can press the compression member **B5** of the spring force set to compress the spring member **B7** along a pin **B51** against the supporting member **B6** and to simultaneously move hole **B12** and the first pivot pin **B1** toward the supporting member **B6**, and therefore the first pivot pin **B1** is disengaged from the locating slot section of each L-shaped sliding slot **A21**. Thereafter, the user turn the control unit **SB** about the second pivot pin **B2** to move the first pivot pin **B1** outwards along the smoothly curved sliding slot section of each L-shaped sliding slot **A21** to unlock the supportive walker **10**, for enabling the connection bar **33** to be adjusted to the desired elevation (FIG. 5 shows the connection bar **33** pulled outwards through 30° angle). Because the control unit **SB** has bottom projections **B3**, pulling the control unit **SB** outwards from the mounting unit **SA** causes the bottom projections **B3** to move upwards along the passage **41**. Therefore, the user can easily push the connection bar **33** upwards to fold the supportive walker **10** with less effort.

Referring to FIG. 6, when pushed the connection bar **33** to the upper side in the passage **41**, the control unit **SB** is received to the mounting unit **SA**, and therefore the supportive walker **10** is collapsed. When the control unit **SB** moved to the angle about 15° relative to the vertical axis, the first pivot pin **B1** is disposed in the sliding slot section of each L-shaped

sliding slot **A21**, however the spring force set is still maintained at the compressed status, showing that the connection bar **33** is still not locked yet. When zeroed the contained angle between the control unit **SB** and the vertical axis, as shown in FIG. 7, the oblong sliding channels **B8** at the control unit **SB** are in line with the L-shaped sliding slots **A21** at the mounting unit **SA**, therefore the first pivot pin **B1** can be moved downwards along the passage **41** and the sliding slot section of each L-shaped sliding slot **A21** to release the compressed status of the spring force set, for enabling the control unit **SB** to be locked to the mounting unit **SA**. At the same time, the inner protruding block **B4** of the control unit **SB** is inserted through the opening **A4** in the middle part of the mounting unit **SB** into the passage **41** of the corresponding limitation plate **40** to hold down the connection bar **33**. FIG. 8 shows the connection bar **33** positioned in the top side inside the passage **41**, and the inner protruding block **B4** prohibits the connection bar **33** from downward displacement. Therefore the supportive walker **10** is positively locked in the folded position.

When wishing to extend out the front frame **20** and the rear frame **30**, press the compression member **B5** and pull the control unit **SB** outwards to disengage the inner protruding block **B4** from the passage **41** temporarily. At this time, the connection bar **33** fall to the bottom side in the passage **41** to press the bottom projections **B3** to due to the effect of its gravity weight, and therefore the control unit **SB** is forced by the lever action to move along the sliding slot section of each L-shaped sliding slot **A21** to the respective locating slot section, so as to return the inner protruding block **B4** to its

former position and to stop the connection bar **33** in the bottom side inside the passage **41**, preventing relative displacement between the front frame **20** and the rear frame **30**.

While only one embodiment of the present invention has been shown and described, it will be understood that various modifications and changes could be made thereunto without departing from the spirit and scope of the invention disclosed.

Although the present invention has been explained in relation to its preferred embodiment, it is to be understood that many other possible modifications and variations can be made without departing from the spirit and scope of the invention as hereinafter claimed.